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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/719,242	07/05/2001	Ricardo Simon Sussmann	14148	5382

7590

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EXAMINER

HANNAHER, CONSTANTINE

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 03/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/719,242

Applicant(s)

SUSSMANN ET AL.

Examiner

Constantine Hannaher

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- ☐ Interview Summary (PTO-413) Paper No(s). _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

National Stage Application

1. The Examiner acknowledges consideration of the International Preliminary Examination Report in International Application PCT/IB99/01002. MPEP § 1893.03(e).

Oath/Declaration

2. Note: a national stage application filed under 35 U.S.C. 371 may not claim benefit of the filing date of the international application of which it is the national stage since its filing date is the date of filing of that international application. See also MPEP § 1893.03(b). Stated differently, since the international application is not an earlier application (it has the same filing date as the national stage), a priority claim in the national stage to the international application is inappropriate.
3. When applicant states that the post office address is "as above" referring to the identification of the residence applicant's representative should keep in mind that a "residence" is a city and state or foreign country. The superfluous information given for residence is accepted as constituting a mailing address. However, a visit to www.streetmap.co.uk makes it very apparent that the Office has *not* been able to discern the city and state or foreign country of residence from the information supplied. See the requirements of 37 CFR 1.63(c)(1) as amended effective November 7, 2000.

Specification

4. The abstract which appears on the front page of the pamphlet of published international application number WO 99/64892 will be used as the abstract for this application. MPEP § 1893.03(e).

Claim Objections

5. The detector "elements" of independent claim 1 must be a reference to the first and second layers, since no other antecedent basis is afforded for incident radiation giving rise to output signals.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is not clear what distinction is afforded by reciting in independent claim 1 that the first and second layers are "optimized" when it should be apparent that optimization is a matter of judgment upon which two practitioners need not agree. It is not clear what distinction is afforded by reciting in dependent claim 8 that the first layer is "optimized" for the same reason. The balance of the claims is rejected on the basis of their dependence.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made

in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-6 and 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kraner (US003527944A) in view of Lu *et al.* (US005773830A) and Kitaguchi (US005457322A).

With respect to independent claim 1, Kraner discloses a detector **40** (Fig. 4) for ionizing radiation (column 2, lines 55-56) comprising a first layer **42** of material and a second layer **44** of material adjacent to the first layer, the layers being connected electrically to a common contact **f**, and with respective first and second contacts **d**, **e** connected to the first and second layers so that the detector simultaneously provides first and second output signals corresponding to radiation incident on the layers (in the other embodiment of Fig. 2, the simultaneous first and second output signals are input to circuitry **20**). The material in the detector **40** of Kraner is not a diamond material. Lu *et al.* discloses that a detector (Fig. 2) comprising a layer **38** of diamond material with first and second contacts **40**, **42** is known. In view of the improved collection distance described by Lu *et al.* by using a diamond material for detecting ionizing radiation, it would have been obvious to one of ordinary skill in the art at the time the invention was made to specify that the first and second layers **42**, **44** in the detector **40** of Kraner were a diamond material. The layers in the detector **40** of Kraner are of at least similar thickness. Kitaguchi discloses that the creation of different thicknesses of respective depletion regions in a detector for ionizing radiation for the detection of different types of radiation is known. In view of the utility of detecting different types of radiation with a single detector as described by Kitaguchi, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detector suggested by Kraner and Lu *et al.* to specify that the first and second layers of diamond material were of different thicknesses. Since the thicknesses of the layers such as are found in the detectors of Kraner, Lu *et al.*, and the prior art to Kitaguchi (column

1, lines 18-45) are fixed, the selection thereof upon manufacturing may be fairly described as optimized.

With respect to dependent claim 2, the common contact **f** in the detector **40** of Kraner comprises a semiconductor layer (adjoined surface doped regions) between the first and second layers **42, 44**. Those of ordinary skill in the art are familiar with metallic electrodes as well.

With respect to dependent claim 3, the material for the common contact is a choice within the ordinary skill in the art in view of the desired performance in view of such concerns as material compatibility and adhesion and electrical characteristics.

With respect to dependent claim 4, the thickness of the first layer **42** suggested by Kraner, Lu *et al.*, and Kitaguchi is a choice within the ordinary skill in the art in view of the variety of environments in which the detector is useful (see column 12, lines 1-7 of Kitaguchi).

With respect to dependent claims 5 and 6, Lu *et al.* discloses that a layer of diamond material with a collection distance within the recited range is known (column 5, lines 47-49).

With respect to dependent claim 8, optimization for the detection of beta particles, x rays and gamma rays in a single depletion region thickness is disclosed by Kitaguchi. It would have been obvious to one ordinary skill in the art at the time the invention was made to retain such an optimization in manufacturing the thickness of one of the detectors **42, 44** in the detector suggested by Kraner and Lu *et al.*

With respect to dependent claim 9, the thickness of the second layer **44** suggested by Kraner, Lu *et al.*, and Kitaguchi is a choice within the ordinary skill in the art in view of the variety of environments in which the detector is useful (see column 12, lines 1-7 of Kitaguchi).

With respect to dependent claim 10, optimization for the detection of alpha particles in a single depletion region thickness is disclosed by Kitaguchi. It would have been obvious to one

ordinary skill in the art at the time the invention was made to retain such an optimization in manufacturing the thickness of one of the detectors **42, 44** in the detector suggested by Kraner and Lu *et al.*

With respect to dependent claim 11, the detector of Kraner further includes respective conductive layers **d, e** on the outer surface of the first and second layers of material.

With respect to dependent claim 12, the material for the conductive layers is a choice within the ordinary skill in the art in view of the desired performance in view of such concerns as material compatibility and adhesion and electrical characteristics.

With respect to dependent claim 13, in view of the conductors illustrated in the detectors of Kraner, Lu *et al.*, and Kitaguchi, respective active contacts connected to the conductive layers **d, e** in the detector of Kraner are suggested.

With respect to dependent claim 14, Lu *et al.* discloses a radiation detector apparatus comprising a detector, bias means **44**, and amplifier **48**. Kitaguchi discloses bias means (Fig. 7) and a signal processor for the output signals. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide bias means and an amplifier each as suggested by Lu *et al.* for the discrete detectors of Kraner such that the discriminating detection suggested by Kitaguchi may be accomplished.

Response to Submission(s)

11. The amendment filed July 5, 2001 has been entered.

Allowable Subject Matter

12. Claim 7 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Art Unit: 2878

13. The following is a statement of reasons for the indication of allowable subject matter: although a collection distance of at least 25 micrometers as claimed by Lu *et al.* is a range that encompasses the range recited in dependent claim 7, nevertheless, the claimed range begins at a value which is an order of magnitude greater than that of the range taught by Lu *et al.* at column 5, line 48 and is considered sufficiently distinct.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Constantine Hannaher whose telephone number is (703) 308-4850. The examiner can normally be reached on Monday-Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ch
March 4, 2003

Constantine Hannaher
HANNANER